Asthma Prevalence per state

2025-10-28

Question

Is there a correlation between the proportion of low air quality days and prevalence of asthma per state?

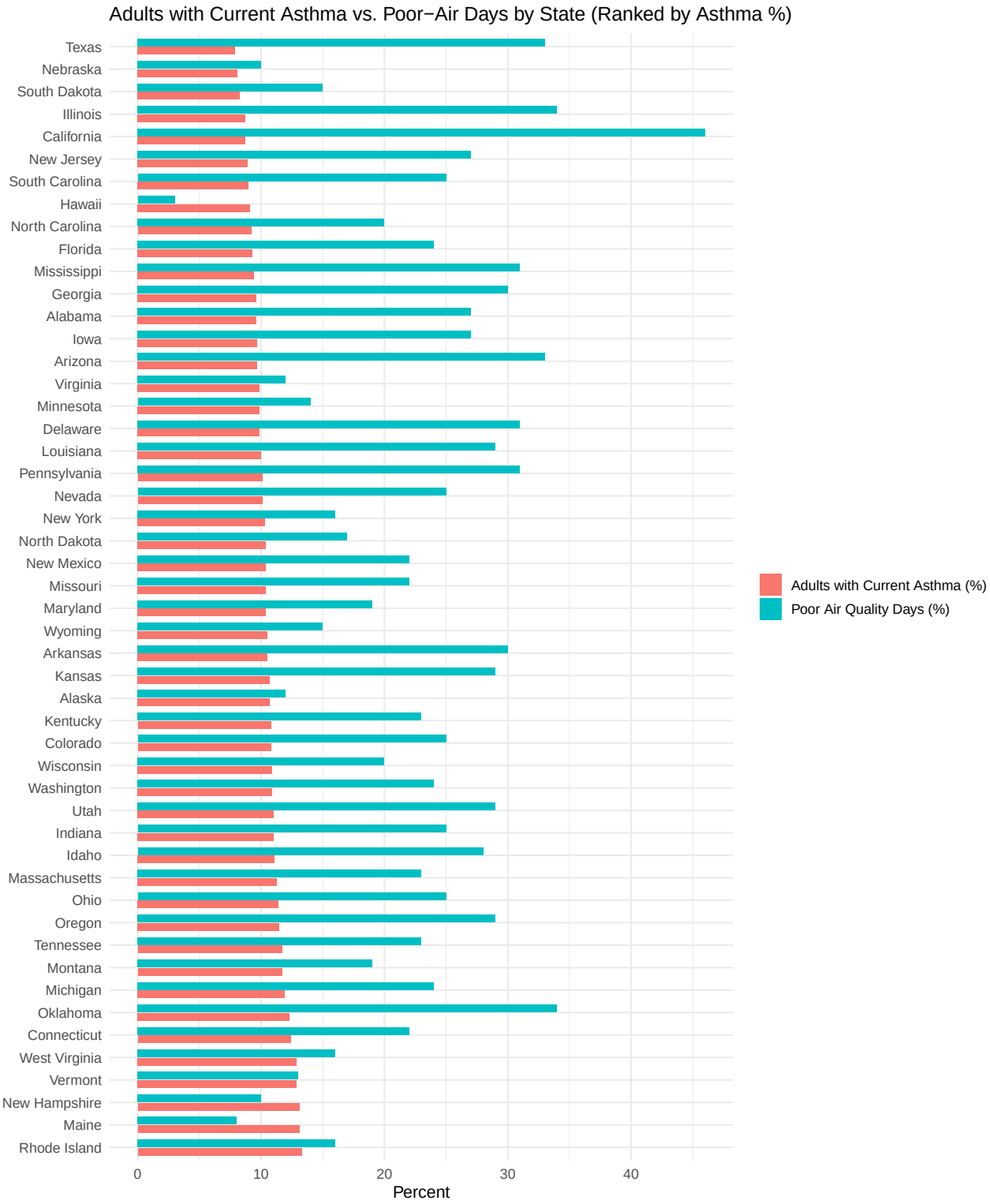
Hypothesis

The state you live in does impact your chances of having asthma. The states with lower air quality will have higher rates of asthma.

Possible test to run

We could use the Glm test to test the probability that the correlation between air quality and asthma is significant, and use the linear regression model to test the strength of the correlation between asthma and air quality.

Plot/Graph



Significance

- **Pearson correlation** (asthma % vs poor-air %): **r = -0.279**, **p = 0.0497**.
- **Spearman correlation** (rank-based): **rho = -0.258**, p = 0.07.
- **Linear model**: asthma = 11.560 + (-0.046 × poor-air%); 95% CI for slope **[-0.092, -0.000]**; **R² =**

0.078.

Interpretation: There is a statistically significant but **weak** relationship; the sign is given by the slope above.

Table 1: Top 5 states by adult asthma (%)

State	Adults with Asthma (%)
Rhode Island	13.3
Maine	13.1
New Hampshire	13.1
Vermont	12.9
West Virginia	12.9

Table 2: Bottom 5 states by adult asthma (%)

State	Adults with Asthma (%)
Texas	7.9
Nebraska	8.1
South Dakota	8.3
California	8.7
Illinois	8.7

Table 3: Top 5 states by poor-air days (%)

State	Poor-Air Days (%)
California	46
Illinois	34
Oklahoma	34
Arizona	33
Texas	33

Table 4: Bottom 5 states by poor-air days (%)

State	Poor-Air Days (%)
Hawaii	3
Maine	8
Nebraska	10
New Hampshire	10
Alaska	12